

1 **Amendment to the Claims**

2 **In the Claims:**

3 Please amend Claims 30-33 and Claim 39, and add new Claims 41 and 42 as follows:

4 Claims 1 – 23 (Previously Cancelled)

5 24. (Original) A flow cytometer system, adapted to determine one or more characteristics of
6 an object suspended in a flow stream from an image of the object, comprising:

7 (a) a light source that produces a beam of light;

8 (b) a first reflecting surface and a second reflecting surface maintained in an
9 opposite, facing relationship so as to define a reflection cavity including a field of view traversed by
10 an object, said beam of light being incident upon the first reflecting surface at an acute angle relative
11 to a normal to the first reflecting surface and being reflected back and forth between the first
12 reflecting surface and the second reflecting surface so as to cross the field of view a plurality of
13 times, thereby illuminating the object as it passes through the field of view;

14 (c) a first set of optics disposed so that light traveling from the object passes through
15 the first set of optics so as to produce a first image of the object; and

16 (d) a first light detector disposed so as to receive the first image of the object, said first
17 light detector detecting at least one characteristic of the object.

18 25. (Original) The flow cytometer system of Claim 24, wherein the first light detector
19 comprises a time-delay integration (TDI) detector that produces an output signal by integrating light
20 from at least a portion of the object over time.

21 26. (Original) The flow cytometer system of Claim 24, wherein the first light detector
22 comprises a photomultiplier tube.

23 27. (Original) The flow cytometer system of Claim 24, wherein the first reflecting surface
24 and the second reflecting surface are supported by a support member.

25 28. (Original) The flow cytometer system of Claim 24, further comprising:

26 (a) a second set of optics disposed so that light traveling from the object passes
27 through the second set of optics so as to produce a second image of the object; and

28 (b) a second TDI detector disposed so as to receive the second image, said second
29 TDI detector producing a second output signal that is indicative of at least one characteristic of the
30 object, said second TDI detector producing the second output signal by integrating light from at least

1 a portion of the object over time, wherein the first and second output signals are combined to produce
2 a stereo image of the object.

3 29. (Original) The flow cytometer system of Claim 24, wherein the first set of optics
4 comprises a microscope objective.

5 30. (Currently Amended) The ~~illumination~~ flow cytometer system of Claim 24, wherein the
6 first reflecting surface forms an acute angle with the second reflecting surface, said acute angle being
7 selected so that the beam of light that is reflected back and forth between successively different points
8 along the first reflecting surface and the second reflecting surface that are spaced apart in a first direction
9 eventually begins to reflect back and forth between successively different points along the first reflecting
10 surface and the second reflecting surface in a second direction that is opposite to the first.

11 31. (Currently Amended) The ~~illumination~~ flow cytometer system of Claim 24, wherein at least
12 one of the first reflecting surface and the second reflecting surface is curved to focus the beam of light
13 onto an axis along which the object moves through the reflection cavity, to reduce a spread of the beam of
14 light where the beam of light illuminates the object.

15 32. (Currently Amended) The ~~illumination~~ flow cytometer system of Claim 31, wherein said
16 at least one of the first and the second reflecting surfaces is curved about one of a first axis that is
17 generally aligned with a direction of travel of the object, and a second axis that is generally
18 orthogonal to the direction of travel of the object through the reflection cavity.

19 33. (Currently Amended) The ~~illumination~~ flow cytometer system of Claim 31, wherein said at
20 least one of the first and the second reflecting surfaces is curved about both a first axis that is generally
21 aligned with a direction of travel of the object, and a second axis that is generally orthogonal to the direction
22 of travel of the object through the reflection cavity.

23 Claims 34 – 37 (Previously Cancelled)

24 38. (Previously Presented) An illumination system that increases light incident upon an
25 object moving relative to the illumination system, comprising:

- 26 (a) a light source producing a beam of light; and
27 (b) a first reflecting surface and a second reflecting surface disposed opposite each
28 other and maintained in a facing relationship so as to define a reflection cavity, said reflection cavity
29 having a field of view through which the object passes between the first reflecting surface and the
30 second reflecting surface, said beam of light being incident upon the first reflecting surface at an

1 acute angle relative to a normal to the first reflecting surface, said beam of light being reflected back
2 and forth between the first and second reflecting surfaces so as to cross the field of view a plurality of
3 times, said beam of light thus being incident on the object a plurality of times as the object traverses
4 the field of view, said first reflecting surface and said second reflecting surface being sized and
5 oriented such that said beam of light both enters and exits said reflection cavity adjacent one of said
6 first reflecting surface and said second reflecting surface.

7 39. (Currently Amended) An illumination system adapted to increase light incident upon an
8 object that is moving relative to the illumination system, comprising:

9 (a) a light source producing a beam of light;
10 (b) a first reflecting surface and a second reflecting surface disposed opposite each
11 other and maintained in a facing relationship so as to define a reflection cavity, said reflection cavity
12 having a field of view through which the object passes between the first reflecting surface and the
13 second reflecting surface, said beam of light being incident upon the first reflecting surface at an
14 acute angle relative to a normal to the first reflecting surface, said beam of light being reflected back
15 and forth between the first and second reflecting surfaces so as to cross the field of view a plurality of
16 times, said beam of light thus being incident on the object a plurality of times as the object traverses
17 the field of view; and

18 (c) means for controlling a ~~waist of~~ diameter of the beam of light within the
19 reflection cavity.

20 40. (Previously Presented) The illumination system of Claim 39, wherein said means
21 comprises a curvature associated with at least one of the first reflecting surface and the second
22 reflecting surface.

23 41. (New) An illumination system adapted to increase light incident upon an object that is
24 moving relative to the illumination system, comprising:

25 (a) a light source producing a beam of light; and
26 (b) a first reflecting surface and a second reflecting surface disposed opposite each
27 other and maintained in a facing relationship so as to define a reflection cavity, said reflection cavity
28 having a field of view through which the object passes between the first reflecting surface and the
29 second reflecting surface, said beam of light being incident upon the first reflecting surface at an
30 acute angle relative to a normal to the first reflecting surface, said beam of light being reflected back

1 and forth between the first and second reflecting surfaces so as to cross the field of view a plurality of
2 times, said beam of light thus being incident on the object a plurality of times as the object traverses
3 the field of view, at least one of the first reflecting surface and the second reflecting surface being curved
4 to focus the beam of light onto an axis along which the object moves through the reflection cavity, to
5 reduce a spread of the beam of light where the beam of light illuminates the object.

6 42. (New) The illumination system of Claim 41, further comprising:

7 (a) a first set of optics disposed so that light traveling from the object passes through
8 the first set of optics so as to produce a first image of the object; and

9 (b) a first light detector disposed so as to receive the first image of the object, said first
10 light detector detecting at least one characteristic of the object.